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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/574,357	03/30/2006	Akihiro Miyamoto	NNA-224-B	9244

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TROY, MI 48084

EXAMINER

LORENCE, RICHARD M

ART UNIT	PAPER NUMBER
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3681

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ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/574,357	Applicant(s) MIYAMOTO ET AL.	
	Examiner Richard M. Lorence	Art Unit 3681	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 March 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/12/2006</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This is the first Office action on the merits of Application No. 10/574,357 filed on March 30, 2006. Claims 1-18 are currently pending.

Priority

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). A copy of the certified copy of the priority document has been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

Information Disclosure Statement

The information disclosure statement (IDS) submitted on October 12, 2006 has been considered by the examiner.

The listing of references in paragraphs 3 and 117 of the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Drawings

Figures 5A-7B should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

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The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the input shaft, output shaft, transmission rotation shaft recited in claims 14 and 16 must be shown or the features canceled from the claims. No new matter should be entered.

The drawings are further objected to because:

the drawings contain excessive text contrary to PCT Rule 11.11(a) and 37 CFR 1.84(o);

the cross sectional views in Figures 1, 5A, 6A, 7A, 8, 10, 13, 15, 17 and 19 do not include appropriate hatching as required by PCT Rule 11.13(b) and 37 CFR 1.84(h)(3); and

in each of Figures 2 and 9 the lead line associated with the reference character "1a" is misdirected.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an

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application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The abstract of the disclosure is objected to because: in line 1 "lower" should read -- lowers --; the reference numbers have not been placed in parentheses (PCT Rule 8.1); and it includes numerous occurrences of the legal phraseology "said".

Correction is required. See MPEP §§ 608.01(b) and 1826.

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The disclosure is objected to because of the following informalities:

The Brief Description of the Drawings should refer to each of Figures 5A, 5B, 6A, 6B, 7A and 7B; in each of paragraphs 10, 17, 19, 22, 24, 26 and 28 "arrow view" apparently should read -- plan view --. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, lines 11-13 are unclear regarding the "support force pressing the balk ring against the clutch gear and a relative rotation regulating structure". As best understood the support force presses the balk ring 4 against the clutch gear 3, but does not press the balk ring against the relative rotation regulating structure 7, 8.

Also in claim 1, lines 15-17 are incorrect regarding the synchronizing support force generating mechanism. As best understood the relative rotation regulating structure 7, 8, rather than the synchronizing support force generating mechanism 4d, 5d, regulates the relative rotation between the balk ring 4 and the synchro ring 5 .

The recitation of the position of the synchronizing support force generating mechanism in lines 1-2 of claim 2 is vague. As best understood the balk ring convex portion 4d is formed on the balk ring and faces the synchro hub, while the synchro hub concave portion 5d is formed on the synchro hub and faces the balk ring. Similarly, the recitation of the position of the relative rotation regulating structure in lines 6-7 of claim 2 is vague. As best understood the relative rotation positioning convex portion 7 is formed on the balk ring and faces the synchro hub, while the relative rotation positioning concave portion 8 is formed on the synchro hub and faces the balk ring.

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Further in line 4 of claim 2 the recitation of the "a synchronizing support force" constitutes a double inclusion of this force which was previously recited in line 11 of claim 1. It is suggested that "a synchronizing support force" be changed to -- the synchronizing support force --.

Claim 2 recites the limitations "the indexed relative rotation" and "the concave-convex contact" in lines 5 and 10, respectively. There is insufficient antecedent basis for these limitations in the claim.

Claim 12, lines 4-6 and claim 13, lines 2-3 are unclear regarding the "support force pressing the balk ring against the clutch gear and a relative rotation regulating structure". As best understood the support force presses the balk ring 4 against the clutch gear 3, but does not press the balk ring against the relative rotation regulating structure 7, 8.

The recitation of the position of the relative rotation regulating structure in lines 6-7 of claim 12 and in lines 4-5 of claim 13 is vague. As best understood the relative rotation positioning convex portion 7 is formed on the balk ring and faces the synchro hub, while the relative rotation positioning concave portion 8 is formed on the synchro hub and faces the balk ring.

The recitation of the position of the synchronizing support force generating mechanism in lines 6-7 of claim 13 is vague. As best understood the balk ring convex portion 4d is formed on the balk ring and faces the synchro hub, while the synchro hub concave portion 5d is formed on the synchro hub and faces the balk ring.

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Claim 13 recites the limitations “the indexed relative rotation” and “the concave-convex contact” in lines 10 and 15, respectively. There is insufficient antecedent basis for these limitations in the claim.

In lines 5-6 of each of claims 14 and 16 the direction in which the coupling sleeve moves, i.e. “axially toward the transmission rotation shaft” is unclear.

In lines 13 of each of claims 14 and 16 “being formed a balk ring” is unclear. It is suggested that “formed a balk ring” be changed to -- formed with a balk ring --.

Claim 16 recites the limitation “the transmission rotation shaft” in 4. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 10 as best understood is rejected under 35 U.S.C. 102(b) as being anticipated by US 5,105,927 A (Frost).

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Frost discloses a transmission synchronizer including a synchro hub (26), a balk ring (40) having a cone surface (46) and a clutch gear (12) having a cone surface (44). The synchronizer of Frost is operated by a method comprising the steps of generating a relative rotation between the synchro hub and a balk ring during a shift by a minute synchronizing torque generated between a balk ring cone surface and a cone surface of a clutch gear, the relative rotation inducing a circumferential force (see e.g. column 4, lines 47-57); and converting the circumferential force to an axially applied synchronizing support force, the axially applied synchronizing support force pressing the balk ring against the clutch gear (see e.g. column 4, lines 57-65).

Claim 10 as best understood is rejected under both 35 U.S.C. 102(a) and 35 U.S.C. 102(e) as being anticipated by US 2005/0061095 A1 (Yoshino et al.).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Note particularly paragraph 8.

Claims 1-18 as best understood are rejected under 35 U.S.C. 102(b) as being anticipated by US 2004/0154892 A1 (Coxen et al.).

Coxen et al. discloses a transmission synchronizer (10) comprising a coupling sleeve (36); a synchro hub (32); a balk ring (40); a clutch gear (20); and a synchronizing

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support force generating mechanism (54a, 54b and 56a, 56b); wherein a relative rotation is generated between the synchro hub and the balk ring during a shift by a minute synchronizing torque generated between a balk ring cone surface (40a) and a clutch gear cone surface (24), the relative rotation inducing a circumferential force; wherein the synchronizing support force generating mechanism is adapted to convert the circumferential force to an axially applied synchronizing support force (see e.g. paragraph 18) for pressing the balk ring against the clutch gear. A relative rotation regulating structure (54e, 56e and 46c, 48c) is located between the balk ring and the synchro hub. While in neutral, the relative rotation regulating structure is adapted to regulate the relative rotation between the balk ring and the synchro hub so that the synchronizing support force is not generated (see e.g. paragraph 15).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

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not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-9 and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,105,927 A (Frost) in view of US 5,113,986 A (Frost).

The '927 patent to Frost discloses a transmission synchronizer including a coupling sleeve (20), a synchro hub (26), a balk ring (40) having a cone surface (46), a clutch gear (12) having a cone surface (44), and a synchronizing support force generating mechanism including a synchro hub concave portion (52) and a balk ring convex portion (50) which come into contact with a cam surface (56, 58, 60, 62) to convert circumferential torque induced by contact of the cone surfaces to an axially applied synchronizing support force (see e.g. column 4, lines 57-65). The '927 patent does not disclose the relative rotation regulating structure.

The '986 patent to Frost discloses a transmission synchronizer including relative rotation regulating structure (52, 68) which ensures that a synchronizing support force is not generated when the sleeve is in the neutral position (see e.g. column 5, lines 47-60). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the synchronizer of the '927 patent with relative rotation regulating structure in order to inhibit self-energization due to viscous drag effects in view of the suggestion of the '986 patent.

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Claims 14-18 are rejected under 3 U.S.C. 103(a) as being unpatentable over US 4,573,371 A (Akutagwa) in view of US 5,105,927 A (Frost) and US 5,113,986 A (Frost).

Akutagwa discloses a transmission (Figure 1) having a synchronizer generating synchronizing torque when changing speeds between an input shaft (1a) connected to an engine (D) via a clutch (C) and an output shaft (J). The synchronizer, as best seen in Figure 4(a) comprises a synchro hub (7) fixed to a transmission rotation shaft (1b); an axially movable coupling sleeve (14) connected to the synchro hub; clutch gear (3a) having a cone surface ((3d) and integrated with a main gear (3) a balk ring (5) having a cone surface (5a). Akutagwa does not disclose the claimed synchronizing support force generating mechanism or the relative rotation regulating structure.

As discussed herein above, the '927 patent to Frost discloses a synchronizer having a synchronizing support force generating mechanism (50, 52), and the '986 patent to Frost discloses a synchronizer having a relative rotation regulating structure (52, 68). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the synchronizer of Akutagwa with a synchronizing support force generating mechanism in order to increase the torque capacity for a given input synchronizing force in view of the suggestion of the '927 patent to Frost, and to further provide the synchronizer of Akutagwa with a relative rotation regulating structure in order to in order to inhibit self-energization due to viscous drag effects in view of the suggestion of the '986 patent to Frost.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard M. Lorence whose telephone number is (571) 272-7094. The examiner can normally be reached on Mondays through Fridays from 10:30AM to 7:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles A. Marmor can be reached on (571) 272-7095. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Richard M. Lorence/
Primary Examiner, Art Unit 3681